

***Breastsleeping: Humankind's Oldest and Most Successful Sleep and Feeding Arrangement.***



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**Perceived Conflict of Interest?**

- Safety Consultant for ArmsReach Cosleeper

NB...I had been publishing papers on my research for 15 years before I was asked to be a safety consultant for ArmsReach Cosleeper.

If anything, my empirical research and writings contrast with this product, essentially, demonstrating that you don't need any kind of separate space for a breastsleeping, sober, committed mother to sleep safely with her infant on the same surface

**Refereed, Peer Reviewed Research On Which My Lecture on Breastsleeping Is Based**

- 2020 Ball, H, C. Tomori, **James J. McKenna**. Toward an Integrated Anthropology of Infant Sleep. *AMERICAN ANTHROPOLOGIST*, Volume 121, (3) 595-61
- 2.. 2020 Marinelli K.A., Ball H., **McKenna J.J.**, and Blair P.S. An integrated analysis of maternal-infant sleep, breastfeeding and the sudden infant death syndrome: Research supporting a balanced discourse. *Jour. of Human Lactation*. 35 (3) 510-520
- 3. 2020 Blair P, Ball H, **McKenna J**, Feldman-Winter L, Martinelli K, Bartick M. Bedsharing and Breastfeeding: The Academy of Breastfeeding Medicine Protocol #6, Revision 2019. *Breastfeeding Medicine* (2020) 15 (1) 5-16
- DOI 10.1089/bfm.2019.29144.psb
- 4. 2016 **McKenna JJ** and Lee Gettler There is no such thing as infant sleep , there is not such thing as breastfeeding, there is only *breastsleeping*. *Acta Paediatrica*. 105 (1): 17-21.

**Top Eleven List: What Every Health Professional Should Know**

1. Co-sleeping is "normative" human behavior, it is not "surprising, unexpected, nor irresponsible nor child abuse nor neglect; it is not immoral or inherently stupid or ignorant parental behavior;
2. Sweeping public health recommendations must resonate emotionally & socially with the constituencies for whom they are intended (anti-co-sleeping messages do not);
3. Where infants sleep is often unplanned, and very fluid; most babies sleep in more than one context..from solitary to social. Health brochures capturing social and solitary environments are critical.
4. Co-sleeping is biologically inter-dependent with breast feeding and is associated with an underlying parental biology that motivates it;
5. Co-sleeping is diverse. There is a difference between the act of co-sleeping or co-sleeping in the form of bedsharing and the conditions within which it occurs (which can be safe or unsafe);

### Continued...what we should know...

6. Co-sleeping is not a SIDS risk factor in the same way that prone sleep is WHY? Cosleeping is heterogeneous, policies lack consensus, it is biologically appropriate.
7. For both moral and ethical reasons PARENTS (not medical authorities) must remain the final arbiters of their infant's nighttime needs and sleeping arrangements;
8. Where babies sleep is not ultimately a medical issue at all, but is instead, "relational" and determined by feeding method, philosophical beliefs, feeding method, parental emotional expressions, and/o socio-economic resources;
9. No one-size must-fit all strategy will work remembering that there is more than one way to save babies lives, and promote the well being of families;
10. The early consolidation of infant sleep is a recent socio-cultural construct associated with bottle-feeding cultures and has little to do with what is in an infant's best interest, indeed, it threatens the best interests of infants.
11. According to Sackett (2001) "evidence-based medicine" in the form of sweeping public health recommendations must meet the needs, desires and possibilities of those for whom the recommendations are intended.

### *But first, what is "evidence-based medicine" (EBM) and what steps and principles defines its use and implementation?*

The father of EBM: a Canadian-American physician: Dr. David Sackett:

(founder of the first department of clinical epidemiology at McMaster University in Ontario and later the Director of the Center of Evidence Based Medicine at Oxford University)

### According to the "Father" of evidence based medicine (Sackett et al. 2000)

- Respect patient values, critical to adherence to PUBLIC recommendations;
- Never move from epidemiological studies to sweeping public health recommendations, before first generating hypotheses to be tested as to why population based associations and inconsistencies in the data emerge;;
- Look for clinical exceptions to the generalities;
- Seek consensus among diverse scientists
- And use all lines of evidence available, in making recommendations

### Remember that...

- "Evidence is not a neutral concept, and the production of evidence is politically laden with various groups standing to gain or lose from the adoption of their particular "take" on evidence" (Homer and Broom 2012" 170).
- "Evidence based medicine is not "cookbook" medicine. Because it requires a bottom up approach that integrates the best external evidence with individual clinical expertise and patients' choice, it cannot result in slavish, cookbook approaches to individual patient care. External clinical evidence can inform, but can never replace, individual clinical expertise, and it is this expert that decides whether the external evidence applies to the individual patient at all and if so, how it should be integrated into a clinical decision.

**New Recommendations from the Academy of  
Breastfeeding Medicine, Protocol #6**

BREASTFEEDING MEDICINE  
Volume 15, Number 1, pp 5-16 2020  
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DOI: 10.1089/bfm.2019.29144.psb

*"Safe bedsharing is possible and the existing  
evidence does not support the conclusion that  
bedsharing among breastfeeding infants causes  
sudden infant death syndrome (SIDS) in the  
absence of known hazards."*

authors:

Peter Blair, Helen Ball, James J. McKenna, Lori Fredrick- Winter,  
Kathy Marinelli, Melissa Bartick  
plus 22 MD's, SIDS, breastfeeding, and/or lactation specialists

Table 1. Hazardous Risk Factors or  
or Circumstances During Bedsharing.  
These are factors that increase the risk of SIDS and  
fatal  
sleeping accidents, either alone or when combined with  
bedsharing:

- Sharing a sofa with a sleeping adult ("sofa-sharing")
- Infant sleeping next to an adult who is impaired by
- alcohol or drugs
- Infants sleeping next to toddlers or children
- Infant sleeping next to an adult who smokes
- Sleeping in the prone position
- Never initiating breastfeeding
- Sharing a chair with a sleeping adult
- Sleeping on soft bedding
- Being born preterm or of low birth weight
- Having smoked during the pregnancy

\*\*\*\*"Conversations when a family is bedsharing  
should be nonjudgmental and acknowledge  
context."

"Ending stigma around bedsharing and educating all  
parents about safe bedsharing have the potential to  
reduce infant deaths.

Bedsharing evolved from innate human biological and  
behavioral mechanisms. It is not a singular, discrete, or  
coherent practice, but is composed  
of a diverse range of behaviors, some of which may  
carry risks, making it particularly important to discuss  
bedsharing safety.

Discussing the concept of breastsleeping with  
breastfeeding parents allows a way to discuss safe  
bedsharing"

Not a nice thought here but a  
relevant question.....

*How difficult/easy? is it to  
suffocate a newborn infant?*

### Can Accidental Suffocation Occur?

- 1) "a normal sleeping adult will be aroused by the struggles of an "over-lain" infant before suffocation occurs unless, of course, the adult is inebriated or under the influence of drugs" Valdes-Dapena 1967: 129)
- 2) In describing an experiment testing the ability of newborns to protect their air passages (mouth and nares) from occlusion Rosenblith and Anderson-Huntington (1977) write of the difficulties in applying cellophane and/or cotton: "This may require much effort and skill because of the vigor of defensive responses newborn infants make" p 251

### Newborn Response to Nose and Mouth Occlusion

- "Most infants respond by opening their mouths almost at once and by pushing out with the tongue or yawning. When this proves ineffective in getting rid of the stimulus, more vigorous movements begin, involving head rocking from side to side, head retractions, back arching in avoidance and lastly head batting of (or at) the stimulus. Frequently mouth and head responses will occur simultaneously..."
- Source: Rosenblith and Anderson-Huntington 1977, 251, "Defensive Reactions to Stimulation of the Nasal and Oral Regions in Newborns: Relations to State".

*Consider a few historical observations and what a brief history of infant sleep and feeding recommendations reveals:*

In western industrialized societies...for over at least 80 years, formula-bottle feeding, separation, infant autonomy and protecting the *conjugal* pair ruled!

As does 'confirmation bias' in almost all bedsharing epidemiology

Our culture gave rise to this iconic image

the western infant disarticulated from the caregivers body...and how do babies really sleep?

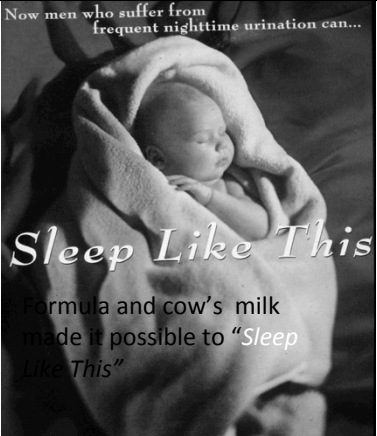
Like this:

Feed, sleep, wake  
Feed, sleep, wake  
Feed, sleep, wake  
Feed, sleep, wake  
Feed, sleep, wake  
ALL NIGHT LONG

Now men who suffer from frequent nighttime urination can...

*Sleep Like This*

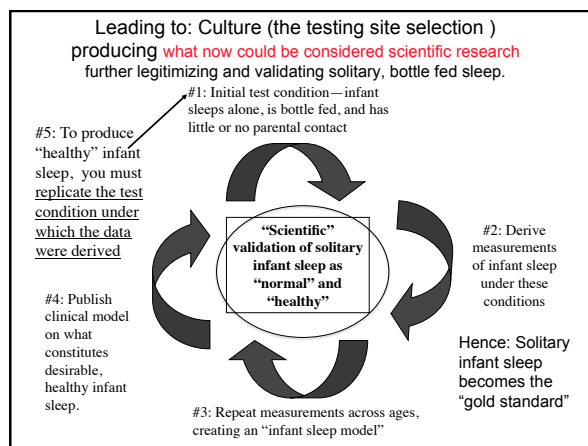
Formula and cow's milk made it possible to "Sleep Like This"



*The western 'science' of infant sleep became one and the same with the values and ideology of the culture that produced them.*

Original pediatric recommendations as to proper human infant feeding and sleeping arrangements *were never based on any empirical, scientific research and/or studies of babies but rather on the social ideologies and values of four white influential men (E.Holt, S.Freud, D. Watson, B. Spock,) ps. who likely never changed a diaper*

Soooo---Not surprisingly, when electro- physiology (brain wave reading, 1925) came along (polysomnographic, PSG, methods) it was presumed that normal-healthy human infant sleep could be derived exclusively from the solitary sleeping, bottle fed infant's all wired up...



## What Do We Know About What Parents Want?

And How Many Bedshare and  
Why Do They Bedshare  
Ignore, Dismiss, or Reject  
Unqualified Prohibitions  
Against Sleeping With Baby  
(Bedsharing?)

As *EBM* Requires Public Recommendations DO need to  
resonate with parental experiences and powerful  
biological evolved emotions and reflexes...

Why not *begin by asking those most effected*?

- **OBJECTIVE:** To understand parents' motivations for bed sharing with their infants aged 1-6 months, their beliefs about safety concerns, and their attitudes about bed-sharing advice.
- **METHODS:** Researchers conducted 4 focus groups with primary caregivers of infants ages 1-6 months who regularly shared beds with their infants.
- Recruited participants from an inner-city primary care center in Pittsburgh, serving primarily African American families who received medical assistance.
  - Chianese J, Ploof D, Trovato C, Chang J. Inner-city caregivers' perspectives on bed sharing with their infants. *Acad Pediatr*. 2009 Jan-Feb; 9(1):26-32. Department of Pediatrics, University of Pittsburgh School of Medicine, Pittsburgh, PA 15213, USA.

Conclusions are *consistent with principles*  
of evidence based medicine:

- "Parents' motivation to bed share outweighed the concerns and the warnings of others. An understanding of parents' perspectives on bed sharing should inform counseling to promote safe sleeping practices." EBM

So, why do parents cosleep in the  
form of bedsharing?  
Let's Ask Them...

- To protect them;
- To monitor them;
- For ease of breast feeding;
- Because infants stop crying
- Because parents get more sleep
- Because it feels good ("right");
- Because there is no other place to put them;
- Because they enjoy them;
- Because they best "attach" with them
- Because some mothers and babies are deaf;
- Because families fear...a fire breaking out
- Because its what babies need and expect
- Validates maternal role, offers father more intimacy with his baby
- Because of earthquakes
- McKenna and Volpe, 2007, Hauck et al 2009, McCoy et al. 2004, Ball 2003 and others...

### Internet Survey Data (approximately 200 self-selected respondents)

- 93.45 breast feed their infants;
- 15.9% planned, 84.1 no plan to do so ;
- 25.4% ease of breast feeding;
- 26% increased parental sleep
- 9.2% improved bonding..for emotional reasons;
- 7.7% reduced infant crying
- 5.6 % protection from SIDS
- 3% to protect from stray bullets
- Deaf parents bedshare to be able to reassure and respond to their babies;
- Parents of deaf infants bedshare to assure them that they are nearby and present;

– from: McKenna and Volpe *Infant and Child Dev.* (2007)

And Who bedshares?  
How many?  
*Why It's So Difficult To Really Know !*

## DETERMINING HOW MANY BEDSHARE IS DIFFICULT!!!

Because most mother will not reveal their bedsharing practices

- Because mothers are lying to their health providers and receiving no safety information for their breastfeeding choices.
  - One recent poll of 600 families in Great Britain revealed that 46% of new mothers when asked if they adhere to governmental sponsored versions of safe infantsleep (no bedsharing) say they do, when they do not (see Actman 2016);
  - Another recent study in the In the United States among a cohort of young (at risk) mothers with full knowledge of what the AAP defines as "safe infant sleep," including no bedsharing, 100% rejected and/or failed to adhere to the AAP recommendations Caraballo et al., 2016)
  - 46% of over 6,000 moms will not reveal their bedsharing practices Kefauver-Tackett et al 2010
- Actman Becker S. Parenting Magazine. <http://www.parents.com/baby/allaboutbabies/areyouamongthe46percentofparentsthatdontsharethis> accessed June 13 2016
- Caraballo M, Shimasaki S, Johnston K, Tung G, Albright K, Halbower, A. Knowledge, attitudes and risk for sudden unexpected death in children of adolescent mothers: A qualitative Study. 2016; Jour of Peds DOI 10.1016.03.031

*But here is a way to roughly estimate..how many babies in USA likely breastsleep from studies of how many breastfeeding mothers leave US hospitals breastfeeding*

- Out of about 4,000,000 or so total US babies born each year in US( CDC National Vital Statistics Report #9 Martin et al)
- 72% leave hospital breastfeeding (about 2,888,000 total moms...
- If 61 % of these bf moms bedshare this amounts to 1,761,680 *breastsleeping dyads*
- If 50% of breastfeeding-moms bedshare this amounts to 1,444,000 bedsharing dyads;
- If 42% of breastfeeding moms bedshare this amounts to 1,212,096 dyads:
- US studies reveal anywhere between 81% to about 25% of mothers bedshare (PRAMS DATA)

The percentages are based on different studies of how of many bf mothers report bedsharing

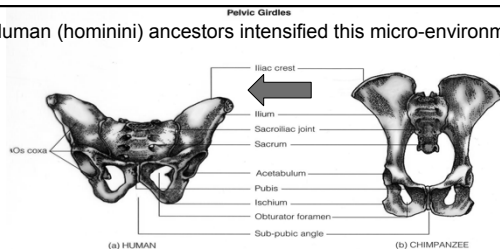
*But there was always one critical set of factors missing in discussion of where babies should sleep*

*an understanding of who the human infant is, biologically.*

*Let's take a look...*

*At birth the human infant is the least neurologically mature primate of all, and the most reliant on physiological regulation by the caregiver for the longest period of time.*

Human (hominini) ancestors intensified this micro-environment:



Acetate 37 (Figure A-6)

© 1997 Wadsworth Publishing Company

- 4-6 million years ago...the shift from quadrupedalism to bipedalism by an extinct arboreal primate ancestor required the co-evolution of a suite of what was to become social and biological changes that came to define our species

Encephalization (increasing brain size) came in conflict with structural constraints imposed by the bipedal pelvis and higher maternal metabolic costs requiring earlier births...

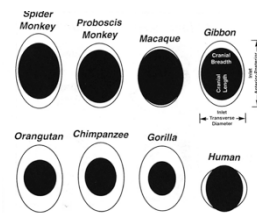


Figure 8.1. Relationship of maternal pelvis (dark outlines) and fetal head (solid dark circle) (after Schultz, 1949).

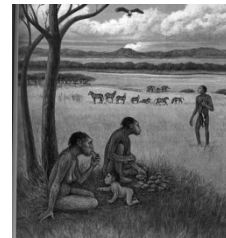
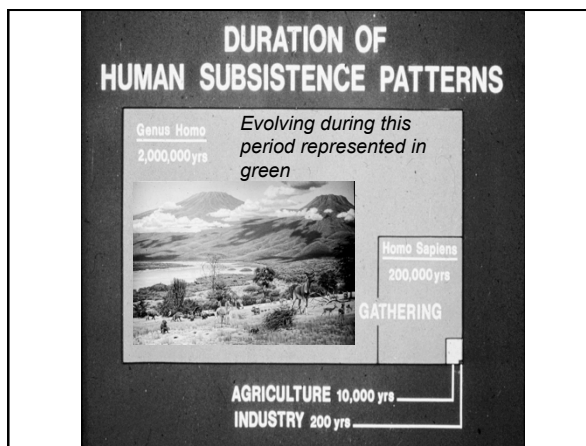


Figure 8.1B. A reconstruction of a hominid ancestor, likely a hominid, standing upright in a savanna environment. The figure is labeled 'Hominid' and shows the individual in a bipedal stance, holding a stick or tool.

### Leading to THIS Percentage of Adult Brain Size:

|                 | Chimpanzee Infant | Human Infant |
|-----------------|-------------------|--------------|
| <u>At Birth</u> | 45                | 25           |
| 3 months        | 50                | 35           |
| 6               | 60                | 45           |
| 9               | 65                | 50           |
| 1 year          | 70                | 60           |
| 2               | 75                | 70           |
| 4               | 85                | 80           |
| 8-9             | 100               | 95           |

\*(100% at 14-17 years)

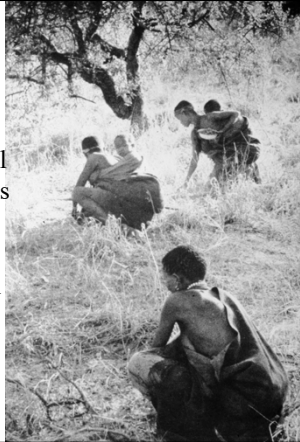


Moreover, all of these changes co-evolved along with the composition of human milk which is low in fats and proteins and higher in fast burning sugars.. exquisitely aligned to accommodate an undeveloped gut..requiring babies to be feed very frequently

*Hence.. the biology of mother's milk predicts sustained continuous mother-infant proximity and contact*

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• <b>Feed and Leave Species</b> <ul style="list-style-type: none"> <li>– (Ungulates) <ul style="list-style-type: none"> <li>• High fat</li> <li>• High protein</li> <li>• Low carbohydrate</li> </ul> </li> </ul> </li> <li>• High calorie = long feeding interval;</li> </ul> <p>(to avoid predators nested infants do not defecate or cry in mother's absence)</p> | <ul style="list-style-type: none"> <li>• <b>Contact, Co-sleeping, And Carry Species</b> <ul style="list-style-type: none"> <li>– (Primates—Humans) <ul style="list-style-type: none"> <li>• Low fat</li> <li>• Low protein</li> <li>• High carbohydrate</li> </ul> </li> </ul> </li> <li>• Low calorie = short feeding interval;</li> </ul> <p>(carried infants cry in mothers absence and defecate spontaneously)</p> |
|---|--|

And the cross-cultural data shows us how this can be implemented



\*\*Alongside the indispensable help of alloparents, or individuals other than the mother who help care for our babies...both men and women alike, friends and relatives!!

Our mammalian, *primate legacy*, is characterized by intense continuous maternal contact (day and night) and prolonged childhoods to bolster and buffer vulnerable immature infants and children



Primate infants are contact seekers!



What Contact Actually Does  
(not just a nice social idea but  
critical to infantile  
physiological regulation

Even amongst  
monkey and ape  
babies

...  
(Separation leads to  
physiological collapse)  
*anaclitic*  
*depression*:  
• *hyperactivity*  
• *conservation-*  
*withdrawal*;  
• *death or recovery*



FIGURE 11 Depressed pigtail infant showing characteristic posture and dejected faces. (From I.C. Kaufman and L.A. Rosenblum, The reaction to separation in infant monkeys: anaclitic depression and conservation-withdrawal. *Psychosom. Med.* 29 (1967), 648-75)

Touch, for all primates, is as important as food for physical and psychological survival, especially so for the most dependent and slowest developing primate of all...*human infants*

*(who never will accept recent cultural memos telling parents how dangerous it is to cosleep)*

And How Do We Know?  
Consider this:

### Massaged Babies

- gained weight 47% faster (per day),
- were more alert,
- left hospital 6 days earlier than non-treated babies (Field et al 1987) ..
- touch stimulates the vagus nerve (to stimulate the gastro-intestinal tract making digestion more efficient;
- facilitates endorphin release reducing stress.. Stress cortisol levels

### Negative Effects of Shortterm Mother-Infant Separation (Nonhuman primates)

- immunological compromises (depressed antibody count);
- increased ACTH stress hormones
- cardiac arrhythmias
- breathing irregularities
- depressed body temperature
- sleep patterns disrupted
- behavioral abnormalities (excessive self-stimulation, hyperactivity, anaclitic depression)

Kangaroo Maternal Care and Neonatal Outcomes: A Meta Analysis (Pediatrics 2016, Boundy et al.)

- Among low birth weigh newborns(124 met inclusion criteria0 Among low birth weigh newborns KMC was associated with
- 36% lower mortality,
- decreased risk of neonatal sepsis, hypothermia, hypoglycemia and hospital readmission and increased exclusive breastfeeding.

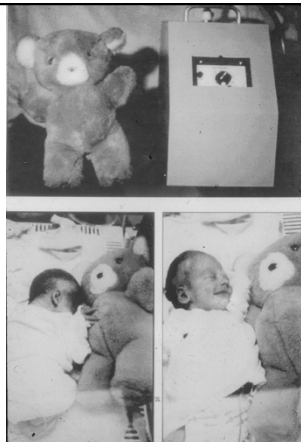
Maternal Infant Care Leads to Healthier Infants With Significantly Better Clinical (Developmental) Outcomes

- Newborns receiving KMC had lower respiratory rate and pain measures, and higher oxygen saturation, temperature, and head circumference growth

Breathing mechanical Teddy Bear!

(reduces infant apneas by 60%)

(Evelyn Thoman 1985)



Epigenetically speaking...

- And what is it:
- *Epigenetics* is the study of how your behaviors and environment can cause changes that affect the way your genes wor , at the DNA level.
- They can be expressed without suppression or inhibited, turned on or off to degrees like dimmer switches by “caps” of hydrogen or carbon atoms producing less aged or efficient (less developed) function.

*New Research Lines Further Elucidating the Critical Role Parents Can Play In Determining What Kind of Brain Their Infant Will Grow (Potentially in relationship to changes at the DNA level itself through methylation processes)*

- Lester et al 2016 Epigenetic programming by maternal behavior in the human infant. *Pediatrics* 124 (4). Hypothesized that DNA methylation of the glucocorticoid receptor gene and less hypothalamic stress response (cortisol reactivity) in infants of mothers who breastfed their infants versus infants of mothers who did not breastfeed.
- Breastfeeding was associated with decreased DNA methylation of the glucocorticoid receptor decreasing cortisol reactivity in 5-month-old infants using the still face test.

## And More from Moore

- 94 healthy children in British Columbia were studied. . Researchers from UBC and BC Children's Hospital asked parents of 5-week-old babies to keep a diary of their infants' behavior (such as sleeping, fussing, crying or feeding) as well as the duration of caregiving that involved bodily contact. When the children were about 4 ½ years old, their DNA was sampled by swabbing the inside of their cheeks.
- (The team examined a biochemical modification called DNA methylation, in which some parts of the chromosome are tagged with small molecules made of *carbon and hydrogen*. These molecules act as "dimmer switches" that help to control how active each gene is, and thus affect how cells function.)

The more active the more likely it can inhibit or exaggerate with deleterious effects some aspect of how the gene is supposed to function, potentially passing the genetic change to the next generation for at least some genes)

## And more epigenetics

- 2017 Moore, Sarah et al. Epigenetic correlates of neonatal holding in humans. *Developmental Psychopathology* (20) 05: 517
- Using DNA (m) across the genome, differentially methylated regions were identified between high and low contact groups. Using a different application to quantify epigenetic age or infants who received low contact from caregivers, exhibited greater infant distress associated with younger epigenetic age, suggesting that "early postnatal contact has lasting associations with child biology." (Moore et al 2017)

### Speaking Neuro-biologically

DEONI ET AL (2013) NEUROIMAGE: 82 (77-86)  
BREASTFEEDING AND EARLY DEVELOPMENT OF WHITE MATTER

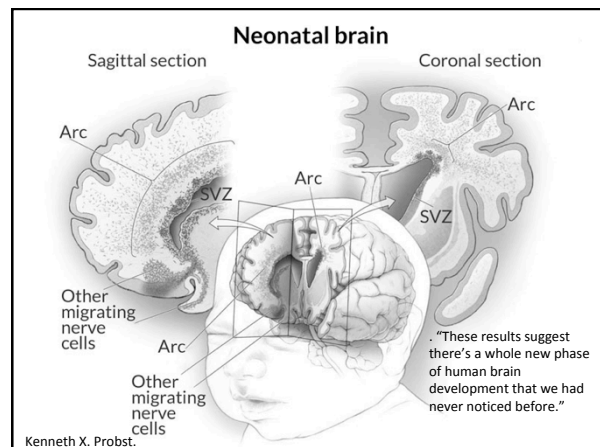
- Deoni et al. used quiet magnetic resonance imaging (MRI) scans to compare measures of white matter (myelin) in 133 healthy children from 10 months through 4 years of age, who were either exclusively breastfed a minimum of 3 months; exclusively formula-fed; or received a mixture of breast milk and formula.
- the relationship between breastfeeding duration and white matter was also examined

### And the findings were...

- Breastfed children exhibited increased white matter development in later maturing frontal and association brain regions that integrates and speeds up communication between all points in the Central Nervous System
- Positive relationships between white matter microstructure and breastfeeding duration are also exhibited in several brain regions, that are anatomically consistent with observed improvements in cognitive and behavioral performance measures.

And guess what was discovered recently hiding behind a newborn human neonates eyes, ready to start a 3 month or so journey to the forebrain (seat of executive functioning) ?

Compliments of Parades et al  
(2016) Science Magazine



ALL OF THIS SHOWS  
 “For species such as primates, the  
 mother IS the environment.”

Sarah Blaffer Hrdy, *Mother Nature* (1999)



Nothing an infant can or cannot do makes sense, except in  
light of mother's body

*Babies Celebrated*, Beatrice Fontanel and Claire D' Harcourt, © 1998 Harry N. Abrams, Inc.

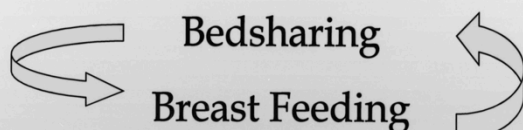
Observing and Physiologically Recording Babies  
 And Mothers Sleeping and Breastfeeding  
 (Together and Apart)



- Lighter sleep (less stage 3-4, more stage 1-2)
- More Diverse Sleep (greater number of stage changes)
- Longer Sleep In Minutes
- Breastfeeding Doubles or Triples
- Increased Interactions, Vocalizations, Movements
- Physiological Unpredictability For Both
- Sleep Positions and Mutual Orientations Change
- More transient and epochal mutual arousals or partner-induced arousals
- Increased Sleep-Wake Stage Synchrony
- Less crying, More Maternal Interventions
- More Heart Rate and Breathing Variability
- Sub-normal body Temperatures in Solitary Sleeping Infants
- Shift in average duration, frequency, and distribution of obstructive and central apneas per stage of sleep

Mother-infant Simultaneous Polysomnography

Infant-Parent Cosleeping with Breast Feeding:  
 An Integrated Adaptive System



Introducing new term: *Breastsleeping*: to dramatize biological and behavioral differences between bottle feeding bedsharing and breastfeeding/bedsharing. A new discourse!

**A mutual re-enforcing system**

*Breastsleeping*...now supported by the Academy of Breastfeeding Medicine Protocol # 6 (2020) Bair et al

And *breastsleeping* means  
 what?

- *In the absence of all known hazardous factors...*

*Breastsleeping* refers to a breastfeeding mother sleeping and feeding along side and in relationship to her infant i.e. cosleeping, (either *same surface*, or *separate surface cosleeping*)

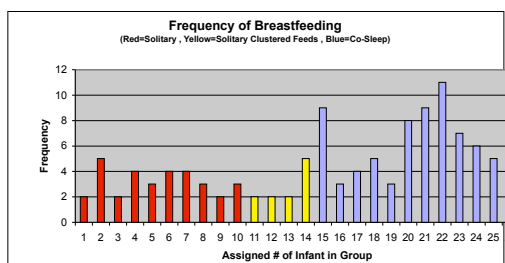
### Why?

Because of the way nighttime contact and proximity changes infant and maternal behavior, sleep-wake architecture, milk production, and metabolism, feeding frequency, mother's hormonal status, infants hormonal status, essentially becoming one and the same, integrated adaptive system, *maximizing infant safety*.

*Led to: "There is no such thing as infant sleep, there is no such thing as breastfeeding, there is only breastsleeping" ( McKenna and Gettler 2016 Acta Paediatrica, 2016)*

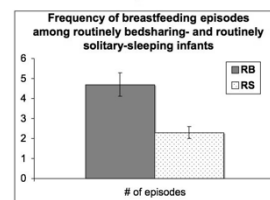
***Breastsleeping*** doubles or triples the nightly number of breastfeeds

## Breastfeeding and Sleeping Arrangement: You Decide



All studies confirm that bedsharing increases breast feeding frequency and duration (below..McKenna et al 1997, see also Ball 2003, Baddock 2006, Young 1999)

### Breastfeeding Behavior in Mother-Infant Dyads



From: McKenna et al. Pediatrics 1997  
"Bedsharing Promotes Breastfeeding"

### Breast Feeding Matters In All Areas Of Infant Mortality Especially Effecting African Americans

- “Breastfed infants are 80% less likely to die before age 1 year than those who never breast fed, even controlling for low birthweight”;
- For every 100 deaths in the formula-fed group, there were 20 deaths in the breast fed group
- Using breast feeding as the normative behavior (20 deaths in the first year) the formula group with 100 deaths, had five times as many deaths or a 500% increase in mortality..
- Forste et al 2001:108 291-296Pediatrics

### And What Other Protections do breastsleeping mothers offer their babies?



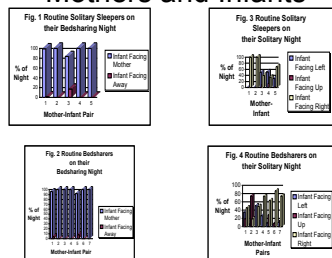
Breastsleeping

mothers adopt a characteristic position (Protective C or Cuddle Curl) in which they make a safe space for their baby to sleep with their bodies. Mother's arm is above the baby's head preventing him/her moving up the bed into the pillows, and her knees are tucked under his/her feet to prevent him/her moving down the bed. Baby is positioned flat on his/her back on the flat mattress for sleep, and next to the mother's breasts for easy feeding.

### Breastsleeping is functionally distinct from bottle-formula bedsharing especially as regards outcomes!

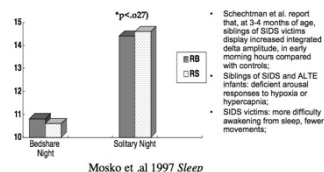
- -avoids prone sleep
  - Mothers body arched around infant, mostly face-to face;
- MORE MATERNAL INSPECTIONS AND PHYSICAL INTERVENTIONS
  - Lighter stage 1 -2 sleep; less deep sleep, stage 3-4
  - More sleep stage changes;
  - More simultaneous activity time;
  - More arousals (transient and epochal)
  - More breastfeds longer durations of breastfeeding over months g
  - -great sensitivity to partner induced arousals;\_
  - More stage shifts;
  - More inspections, monitoring, visual checking
  - More sleep, less infant crying ;
  - Higher body temperature due to more arousals
  - Sources: McKenna et al 2007; Ball 2003

## Body- Facial Orientations Amongst 24 Solitary Sleeping and Bedsharing Mothers and Infants



## Co-sleeping *in the form of* Bedsharing: Increased protection for arousal deficient infants?

Mean Duration of Stage 3-4 Sleep:  
Why Important ?

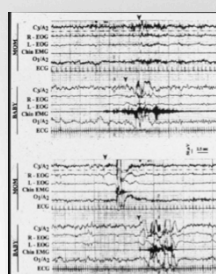


*During co-sleeping maternal-infant behavior and physiology becomes entwined...by way of synchronous partner induced arousals and communication*

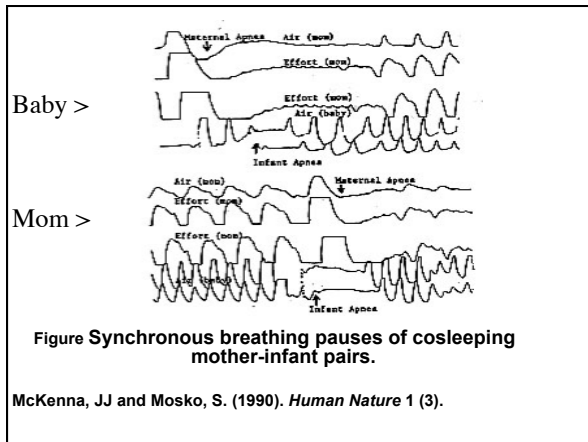
- 60 % of all *maternal arousals* during bedsharing are explained by the infant having aroused first, within  $\pm$  2 seconds while..
- 40% of all *infant arousals* during bedsharing are explained by the mother having aroused within  $\pm$  2 seconds

- 1996 Mosko, S., Richard, C and McKenna, J, Drummond, S, *Infant Sleep Architecture During Bedsharing and Possible Implications for SIDS*. Sleep 19:677-684
- 1997 Mosko, S., Richard, C., McKenna, J., *Infant Arousals in the Bedsharing Environment: Implications for Infant Sleep Development and SIDS*. Pediatrics 100 (2) 841-849
- 1997 McKenna J, Mosko S, and Richard, C, *Bedsharing Promotes Breast Feeding*. Pediatrics 100 (2) 214-219

## EEG Defined Mother and Infant Arousals

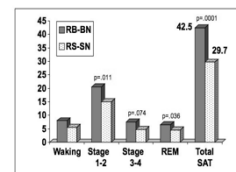


- Infant-induced maternal arousal.
- Maternal-induced infant arousal.



Over 8 hours of sleep approximately 12% of the time mothers and infants are doing the exact same thing at the same time, because the other is doing it.

Synchronicity of Mother-Infant Sleep and Wake: Percent Simultaneous Activity Time ("SAT" on routine nights)



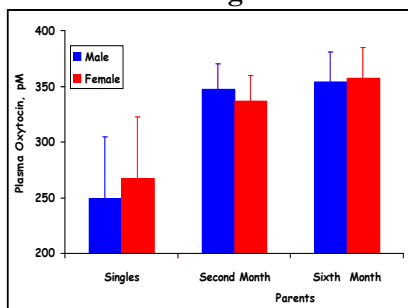
### *The "dyad" IS the unit of study*

Human infant (parental)  
social care is synonomous  
with  
*physiological regulation*

**Guess What? (Human) DADS  
EVOLVED A PATERNAL BIOLOGY  
RELATED TO  
INFANT CAREGIVING, TOO**  
(Complements of Dr. Lee Gettler )  
and

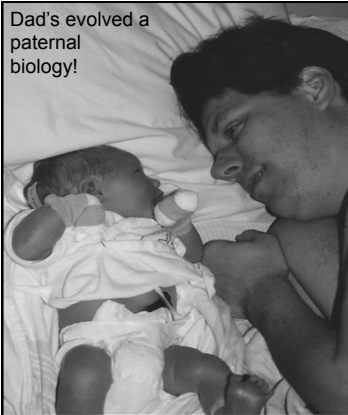
*Babies don't discriminate by sex when it  
comes to who they attach to and how and  
why they do so...*

### Oxytocin in Mothers, Fathers, and Singles



Courtesy of Dr. Ruth Feldman et al.

Dad's evolved a paternal biology!

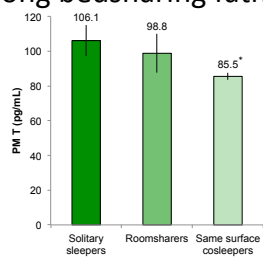


2012 Gettler LT, McKenna JJ, Agustin SS, McDade TW, Kuzawa CW. (2012)

*"Does cosleeping contribute to lower testosterone levels in fathers? Evidence from the Philippines." Plos One 7:9; e41559*

Yes, it does, reflecting a response designed to maximize male sensitivity and patience in caring for their babies

### Testosterone production is lower among bedsharing fathers



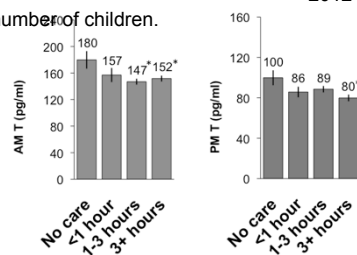
Gettler et al., 2012

- Gettler, McKenna et al (2011) Plos One

### Testosterone is lower among fathers providing childcare?

2009 T regressed on self-reported involvement in childcare. Gettler et al., 2012

number of children.



\* p < 0.05

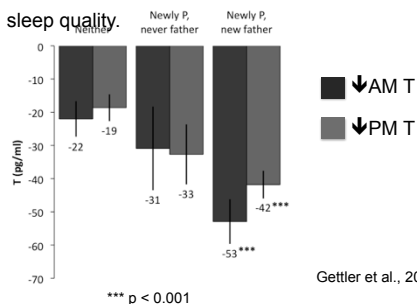
Gettler et al., 2011

## Partnering and fatherhood cause T to decline? Fathering in the Philippines

Gettler et al  
2011 PNAS

$\Delta T$  (2009T – 2005T) regressed on change in P/fatherhood.

• sleep quality.



(N=839  
men)

Gettler et al., 2011

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## LET'S Eliminate this: UNSAFE BEDSHARING PRACTICES



## AND THIS...

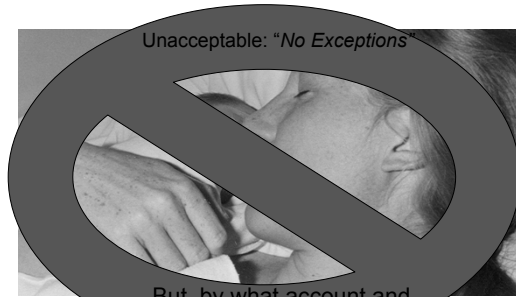


Unsafe adult bed sleep environment (courtesy of Helen Ball)

BUT NOT THIS...



*The question before us really is: can human defining traits...instinctual traits, and appropriate infant-parental inclinations be expunged, suppressed or eradicated? More importantly, Should They? And if so, Who has such a authority?*



**NOR THIS...A 45 MILLION YEAR OLD  
INFANT SLEEP POSITION**



Dr. Sarah Blaffer Hrdy and newborn daughter, Katrinka, 1976